



**7A5-scFv**

► SNV-env Leader

1	TCCACCCTCTGACTCAAGAAAGCTCCTGACAACCAAGAAGA	ATG GAC TGT CTC ACC AAC CTC CGA TCC	70
	N D C L T N L R S	9	
71	GCT GAG GGT AAA GTT GAC CAG GCG AGC AAA ATC CTA ATT CTC CTT GTG GCT TGG TGG GGG	130	
10	A E G K V D Q A S K I L I L L V A W W G	29	
131	TTT GGG ACC ACT GCC GAA GTT TCG ACT GCC CGA <u>GCG</u> <u>CAG</u> <u>CCG</u> <u>GCC</u> ATG GCC GAG GTC	190	
30	F G T T A E V S T A R A A Q P A M A E V	49	
191	AAG CTG CAG CAG TCA GGG GCT GAG CTG GTG AGG CCT GGG GTC TCA GTG AAG ATT TCC TGC	250	
50	K L Q Q S G A E L V R P G V S V K I S C	69	
251	AAG GGT TCT GGC TAC ACA TTC ACT GAT TAT GGT ATG AGC TGG GTG AAA CAG AGT CAT GCA	310	
70	K G S G Y T F T D Y G M S W V K Q S H A	89	
311	AAG AGT CTA GAG TGG ATT GGA CTT ATT AGT ACT TAC TAT GGT GAT CCT AGT TAC AAC CAG	370	
90	K S L E W I G L I S T Y Y G D P S Y N Q	109	
371	AGG TTC AAG GGC AAG GCC ACA ATG ACT GTA GAC AAA TCC TCC AAC ACA GGC TAT TTG GAA	430	
110	R F K G K A T M T V D K S S N T A Y L E	129	
431	CTT GCC AGA CTG ACA TCT GAG GAT TCT GCC ATT TAT TAT TGT GCA AGA TCG GAT GGT AAT	490	
130	L A R L T S E D S A I Y Y C A R S D G N	149	
491	TAC GGG TAT TAC TAT GCT TTG GAC TAC TGG GGC CAA GGC ACT ACG GTC ACC GTC TCC TCA	550	
150	Y G Y Y Y A L D Y W G Q G T T V T V S S	169	
551	GGT GGA GGC GGT TCA GGC GGA GGT GGC TCT GGC GGT GGC GGA TCG GAT ATC GAG CTC ACT	610	
170	G G G G S G G G S G G G S D I E L T	189	
611	CAG TCT CCA TCT TCT TTG GCT GTG TCT CTA GGG CAG AGG GGC ACC ATA TCC TGC AGA GCC	670	
190	Q S P S S L A V S L G Q R A T I S C R A	209	
671	AGT GAA AGT GTT GAT AGT TAT GGC GAT AGT TTT ATG CAC TGG TAT CAG CAG AAA CCA GGA	730	
210	S E S V D S Y G D S Y M H W Y Q Q X P G	229	
731	CAG CCA CCC AAA CTC CTC ATC TAT CGT GCA TCC AAC CTA GAA TCT GGA GTC CCT GCC AGG	790	
230	Q P P K L L I Y R A S N L E S G V P A R	249	
791	TTC AGT GGC AGT GGG TCT GAG TCA GAC TTC ACT CTC ACC ATC GAT CCT GTG GAG GAA GAT	850	
250	F S G S G S S D F T L T I D P V E E D	269	
851	GAT GCT GCA GTG TAT TAC TGT CTG CAA AGT ATG GAA GAT CCG TAC ACG TTC GGA GGG GGG	910	
270	D A A V Y Y C L Q S M E D P Y T F G G G	289	
911	Not I ACC AAG CTG GAA ATA AAA CGG <u>GCG</u> <u>GCA</u> TCG GGC TCC GGG GGC GGT GGT TCT GGT GGT	970	
290	T K L E I K R A A A S G S G G G S G G	309	
971	GGT TCT GGT GGT GGT TCT GGT GGT GGT TCT GGC GGC AGC CCA GTC CAG TTT ATC	1030	
310	G S G G G G S G G G G S G A S P V Q F I	329	

(SEQ ID NO: 1)

(SEQ ID NO: 6)

**FIG. 1**

K6 - scFv

SNV-env Leader

1		ATG GAC TGT CTC ACC AAC CTC CGA TCC	27
1		M D C L T N L R S	9
28	GCT GAG GGT AAA GTT GAC CAG GCG AGC AAA ATC CTA ATT CTC CTT GTG GCT TGG TGG GGG	87	
10	A E G K V D Q A S K I L I L L V A W W G	29	
	Sfi I → K6-scFv		
88	TTT GGG ACC ACT GCC GAA GTT TCG ACT GCC CGA GCG CCC CAG CCG GCC ATG GCC GAG GTC	147	
30	F G T T A E V S T A R A A Q P A M A E V	49	
148	AAG CTG CAG GAG TCA GGG ACT GAA CTT GTG AAG CCT GGG GCT TCA GTG AAT CTG TCT TGC	207	
50	K L Q E S G T E L V K P G A S V N L S C	69	
208	AAG GCT TCT GGC TAC ACC TTC ACC AGC TAC TGG ATG CAC TGG TTG AAG CAG AGG CCT GGA	267	
70	K A S G Y T F T S Y W M H W L K Q R P G	89	
268	CAA GGC CTT GAG TGG ATC GGA GAG ATT GAT CCT GTT GAT AGT TAT ACT AAC TAC AAT CAA	327	
90	Q G L E W I G E I D P V D S Y T N Y N Q	109	
328	AAC TTC AAG GGC AAG GCC ACA CTG ACT GTA GAC AAG TCC TCC ACC ACA GTC TAC ATG CAC	387	
110	N F K G K A T L T V D K S S T T V Y M H	129	
388	CTC AGC AGC CTG ACA TCT GAG GAC TCT CCG GTC TAT TAC TGT GCA AGA AAG GGC TAT GCT	447	
130	L S S L T S E D S A V Y Y C A R K G Y A	149	
448	ATG GAC TAC TGG GGC CAA GGG ACC AAC GTC ACC GTC TCC TCA GGT GGA TGC GGT TCA GGC	507	
150	M D Y W G Q G T N V T V S S G G C G S G	169	
508	GGA GGT GGC TCT GGC GGT GGC GGA TCG GAC ATC GAG CTC ACT CAG TCA CCA GCA ATC ATG	567	
170	G G S G G G S D I E L T Q S P A I M	189	
568	TCT GCA TCT CCA GGG GAG AAG GTC ACC ATG ACC TGC AGT GCC AGC TCA AGT ATA AGT TAC	627	
190	S A S P G E K V T M T C S A S S S I S Y	209	
628	ATG CAC TGG TAC CAG CAG AAG CCA GGC ACC TCC CCC AAA AGA TGG ATT TAT GAC ACA TCC	687	
210	M H W Y Q Q K P G T S P K R W I Y D T S	229	
688	AAA CTG GCT TCT GGA GTC CCT GCT CGC TTC AGT GCC AGT GGG TCT GGG ACC TCT TAT TCT	747	
230	K L A S G V P A R F S G S G S G T S Y S	249	
748	CTC CCA ATC AGC AGC ATG GAG GCT GAA GAT GCT GCC ACT TAT TAC TGC CAT CAG CGG AGT	807	
250	L P I S S M E A E D A A T Y Y C H Q R S	269	
	Not I		
808	AGT TAC CCA TGG ACG TTC GGT GGA GGG ACC AAG CTG GAA ATA AAA CGG GCG GCC GCA TCG	867	
270	S Y P W T F G G G T K L E I K R A A A S	289	
868	GGC TCC GGG GGC GGT GGT TCT GGT GGT TCT GGT GGT GGT GGT TCT GGT GGT GGT GGT GGT	927	
290	G S G G G G S G G G S G G G G S G G G G	309	

**FIG. 2**

(SEQ ID NO: 2)  
(SEQ ID NO: 7)

**- SCFv**

► SNV-env Leader

IG GAC TGT CTC ACC AAC CTC CGA TCC GCT GAG GGT AAA GTT GAC CAG GCG AGC AAA ATC	60
D C L T N L R S A E G K V D Q A S K I	20
TA ATT CTC CTT GTG GCT TGG TGG GGG TTT GGG ACC ACT GCC GAA GTT TCG ACT GCC CGA	120
I L L V A W W G F G T T A E V S T A R	40
<i>Sfi I</i> → 7B2-scfv	
CG GCC CAG CCG GCC ATG GCC CAG GTG CAG CTG CAG TCT GGG ACT GAA CTG GCA ACA	180
A Q P A M A Q V Q L Q Q S G T E L A T	60
CT GGG GCC TCA GTG AGG ATG TCC TGC AAG GCT TCT GGC TAC GCC TTT ACT ACC TAC TGG	240
G A S V R M S C X A S G Y A F T T Y W	80
ATG CAC TGG GTA AAA CAG AGG CCT GGA CAG GGT CTG GAA TGG ATT GGA TAC ATT AAT CCT	300
I H W V K Q R P G Q G L E W I G Y I N P	100
301 ACC ACT GAT TAT ACT GAC TAC AAT CTG AAG TTC AAG GAC AAG GCC ACA TTG ACT GCA GAC	360
101 T T D Y T D Y N L K F R D K A T L T A D	120
361 AAA TCC TCC AGT ACA GCC TAC ATG CAA CTG AGC AGC CTG ACA TCT GAG GAC TCT GCA GTC	420
121 K S S S T A Y M Q L S S L T S E D S A V	140
421 TAT TAC TGT GCA AGA TCG GGG TGG TCC TAT GCT ATG GAC TAC TGG GGG CAA GGG ACC ACG	480
141 Y Y C A R S G W S Y A M D Y W G Q G T T	160
481 GTC ACC ATC TCC TCA CGT GGA GGC GGT TCA GGC GGA GGT GGC TCT GGC GGT GGC GGA TCG	540
161 V T I S S G G G S G G G G S G G G G S	180
541 GAC ATC GAG CTC ACT CAG TCT CCA GCA ATC ATG TCT GCA TCT CCA GGG GAG AAG GTC ACC	600
181 D I E L T Q S P A I M S A S P G E K V T	200
601 ATA ACC TGC AGT GCC AGC TCA AGT GTA AGT TAC ATG CAC TGG TTC CAG CAG AAG CCA GGC	660
201 I T C S A S S S V S Y M H W F Q Q K P G	220
661 ACT TCT CCC AAA CTC TGG ATT TAT AGC ACA TCC AAC CTG GCT TCT GGA GTC CCT GCT CGC	720
221 T S P K L W I Y S T S N L A S G V P A R	240
721 TTC AGT GGC AGT CGA TCT GGG ACC TCT TAC TCT CTC ACA ATC AGC CGA ATG GAG GCT GAA	780
241 F S G S G S G T S Y S L T I S R M E A E	260
781 GAT GCT GCC ACT TAT TAC TGC CAG CAA AGG AGT AGT TAC CCA TTC ACG TTC GGC TCG GGC	840
261 D A A T Y Y C Q Q R S S Y P F T F G S G	280
Not I	
841 ACC AAG CTG GAA ATC AAA CGG CGC GCA TCG GGC TCC GGG GGC GGT GGT TCT GGT GGT	900
281 T K L E I K R A A A S G S G G G G S G G	300
901 GGT GGT TCT GGT GGT GGT TCT GGT GGT GGT TCT GGC GCC AGC CCA GTC CAG TTT	960
301 G G S G G G S G G G G S G A S P V Q F	320
961 ATC CCC CTG CTT GTG GGT CTA GGG ATT TCA	990
321 I P L L V G L G I S	330

**FIG. 3**

(SEQ ID NO: 3)  
 (SEQ ID NO: 8)

# 7E4 - scFv

► SNV-env Leader

1	ATG	GAC	TGT	CTC	ACC	AAC	CTC	CGA	TCC	GCT	GAG	GGT	AAA	GTT	GAC	CAG	GCG	AGC	AAA	ATC	60
1	M	D	C	L	T	N	L	R	S	A	E	G	K	V	D	Q	A	S	K	I	20
61	CTA	ATT	CTC	CTT	GTG	GCT	TGG	TGG	GGG	ACC	ACT	GCC	GAA	GTT	TCG	ACT	GCC	CGA		120	
21	L	I	L	L	V	A	W	W	G	F	G	T	T	A	E	V	S	T	A	R	40
121	<u>GGC</u>	<u>GCC</u>	<u>CAG</u>	<u>CCG</u>	<u>GCC</u>	ATG	GCC	GAG	GTC	AAG	CTG	CAG	CAG	TCA	GGG	GCT	GAG	CTG	GTG	AGG	180
41	A	A	Q	P	A	M	A	E	V	K	L	Q	Q	S	G	A	E	L	V	R	60
181	CCT	GGA	GCT	TCA	GTG	AAG	CTG	TCC	TGC	AAG	ACT	TCT	GGC	TTC	TCC	TTC	ACC	AGC	TAC	TGG	240
61	P	G	A	S	V	K	L	S	C	K	T	S	G	F	S	F	T	S	Y	W	80
241	ATG	AAC	TGG	GTG	AAG	CTG	AGG	CCT	GGA	CAA	GGC	CTT	GAG	TGG	ATT	GGC	ATG	ATT	CAT	CCT	300
81	M	N	W	V	K	L	R	P	G	Q	G	L	E	W	I	G	M	I	H	P	100
301	TCC	GAT	AGT	GAA	ACT	AGT	TIA	ACT	CAG	AGG	TTC	AAG	GAC	AAG	GCC	ACA	CTG	ACT	GTA	GAC	360
101	S	D	S	E	T	S	L	T	Q	R	F	K	D	K	A	T	L	T	V	D	120
361	AAA	TCC	TCC	AGC	ACA	GCC	TAC	ATG	CAA	CTC	AGC	ACC	CCG	ACA	TCT	GAG	GAC	TCT	GGC	GTC	420
121	K	S	S	S	T	A	Y	M	Q	L	S	S	P	T	S	E	D	S	A	V	140
421	TAT	TAC	TGT	GCA	AGA	TCT	CTT	TAT	GCT	AAC	TAC	CCC	TCC	TGG	TTT	ACT	TAC	TGG	GGC	CAA	480
141	Y	Y	C	A	R	S	L	Y	A	N	Y	P	S	W	F	T	Y	W	G	Q	160
481	GGC	ACC	ACG	GTC	ACC	GTC	TCC	TCA	GGT	GGA	GGC	GGT	TCA	GGC	GGA	GGT	GGC	TCT	GGC	GGT	540
161	G	T	T	V	T	V	S	S	G	G	G	S	G	G	G	G	S	G	G	180	
541	GGC	GGG	TCG	GAC	ATC	GAG	CTC	ACT	CAG	TCT	CCA	ACC	ACC	ATG	GCT	GCA	TCT	CCC	GGG	GAG	600
181	G	G	S	D	I	E	L	T	Q	S	P	T	T	M	A	A	S	P	G	E	200
601	AAG	ATC	ACT	ATC	ACC	TGC	AGT	GCC	AGC	TCA	AGT	ATA	AGT	TCC	AAT	TAC	TTG	CAT	TGG	TAT	660
201	K	I	T	I	T	C	S	A	S	S	I	S	S	N	Y	L	H	W	Y		220
661	CAG	CAG	AAG	CCA	GGG	TTC	TCC	CCT	AAA	CTC	TTG	ATT	TAT	AGG	ACA	TCC	AAT	CTG	GCT	TCT	720
221	Q	Q	K	P	G	F	S	P	K	L	L	I	Y	R	T	S	N	L	A	S	240
721	GGA	GTC	CCA	GCT	CGC	TTC	AGT	GGC	AGT	GGG	TCT	GGG	ACC	TCT	TAC	TCT	CTC	ACA	ATT	GGC	780
241	G	V	P	A	R	F	S	G	S	G	8	G	T	S	Y	S	L	T	I	G	260
781	ACC	ATG	GAG	GCT	GAA	GAT	GTT	GCC	ACT	TAC	TAC	TGC	CAG	CAG	GGT	AGT	AGT	ATA	CCG	TAC	840
261	T	M	E	A	E	D	V	A	T	Y	Y	C	Q	Q	G	S	S	I	P	Y	280
841	ACG	TTC	GGA	GGG	GGG	ACC	AAG	CTG	GAA	ATA	AAA	CGG	<u>GGC</u>	<u>GCC</u>	<u>GCA</u>	TCG	GGC	TCC	GGG	GGC	900
281	T	F	G	G	G	T	K	L	E	I	K	R	A	A	A	S	G	S	G	G	300
901	GGT	GGT	TCT	GGT	GGT	GGT	TCT	GGT	GGT	GGT	GGT	GGT	TCT	GGT	GGT	GGT	G				946
301	G	G	S	G	G	G	G	S	G	G	G	G	S	G	G					315	

FIG. 4

(SEQ ID NO: 4)  
 (SEQ ID NO: 9)

# 6C3 - scFv

► SNV-env Leader

1 ATG GAC TGT CTC ACC AAC CTC CGA TCC GCT GAG GGT AAA GTT GAC CAG GCG AGC AAA ATC 60  
 1 M D C L T N L R S A E G K V D Q A S K I 20

61 CTA ATT CTC CTT GTG GCT TGG TGG GGG TTT GGG ACC ACT GCC GAA GTT TCG ACT GCC CGA 120  
 21 L I L L V A W W G F G T T A E V S T A R 40

► 6C3-scFv

121 GCG GCC CAG CCG GCC ATG GCC CAG GTA CAG CTG CAG CAG TCA GGA GCA GAA ATG AAA AAG 180  
 41 A A Q P A M A Q V Q L Q Q S G A E M K K 60

181 CCC GGG GAG TCT CTG AAA ATC TCC TGT AAG GGT TTT GGA TAC GAC TTT AGC ACC TAC TGG 240  
 61 P G E S L K I S C K G F G Y D F S T Y W 80

241 ATC GCC TGG GTG CGC CAG ATG CCC GGG AAA GGC CTG GAG TAC ATG GGG CTC ATC TAT CCT 300  
 81 I A W V R Q M P G K G L E Y M G L I Y P 100

301 GGT GAC TCT GAC ACC AAA TAC AGC CCG TCC TTC CAA GGC CAG GTC ACC ATC TCA GCC GAC 360  
 101 G D S D T K Y S P S F Q G Q V T I S A D 120

361 AAG TCC ATC AGC ACC GCC TAC CTG CAG TGG AGC AGC CTG AAG GCC TCG GAC ACC GCC ATG 420  
 121 K S I S T A Y L Q W S S L K A S D T A M 140

421 TAT TAC TGT GCG AGA GTC TCT GGA TAT TGT AGT AGT ACC AGC TGC TAT GAC TAC TAC TAC 480  
 141 Y Y C A R V S G Y C S S T S C Y D Y Y Y 160

481 TAC TAC ATG GAC GTC TGG GGC CGG GGA ACC CTG GTC ACC GTC TCG AGA GGT GGA GGC GGT 540  
 161 Y Y M D V W G R G T L V T V S R G G G G 180

541 TCA GGC GGA GGT GGC TCT GGC GGT GGC GGA TCG GAC ATC GTG ATG ACC CAG TCT CCT TCC 600  
 181 S G G G S G G G S D I V M T Q S P S 200

601 ACC CTG TCT GCA TCT GTA GGA GAC AGA GTC ACC ATG ACT TGC CGG GCC AGT CAG AAC ATT 660  
 201 T L S A S V G D R V T M T C R A S Q N I 220

661 AAT ATC TGG TTG GCC TGG TAT CAG CAG AAA CCA GGG AAA GCC CCT AAG CTC CTG ATC TAT 720  
 221 N I W L A W Y Q Q K P G K A P K L L I Y 240

721 AAG GCG TCC ACT TTA GAG AGT GGG GTC CCG TCA AGG TTC AGC GGC AGT GGA TCT GGG ACA 780  
 241 K A S T L E S G V P S R F S G S G S G T 260

781 GAA TTC ACT CTC ACC ATC AGC GGC CTG CAG CCT GAT GAT TTT GCA AGT TAT TAC TGT CAA 840  
 261 E F T L T I S G L Q P D D F A S Y Y C Q 280

Not I

841 CGG TAT GAT AGT GAC TGG TCG TTC GGC CAA GGG ACC AAG CTG GAG ATC AAA CGT GCG GCC 900  
 281 R Y D S D W S F G Q G T K L E I K R A A 300

901 GCA TCG 906  
 301 A S 302

**FIG. 5**

(SEQ ID NO: 5)  
 (SEQ ID NO: 10)